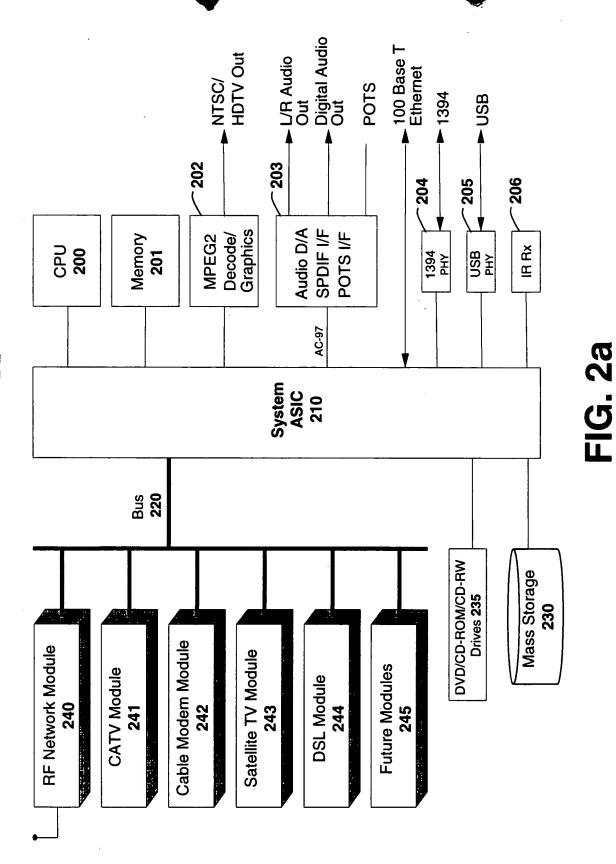


FIG. 1



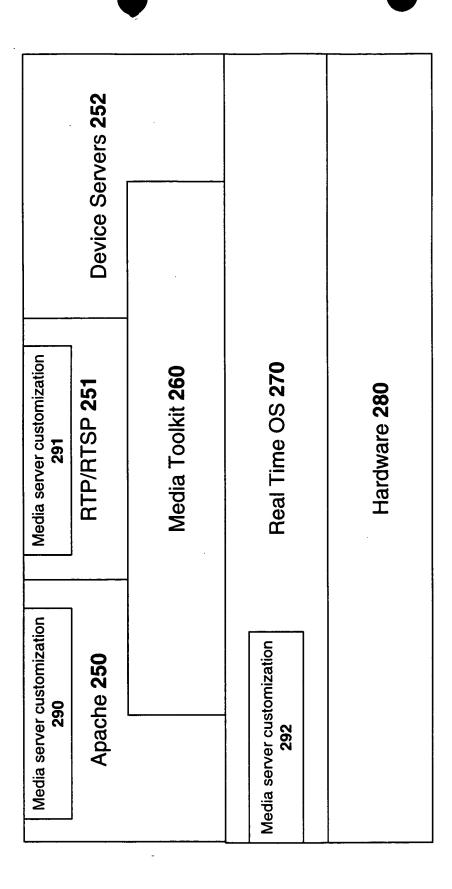
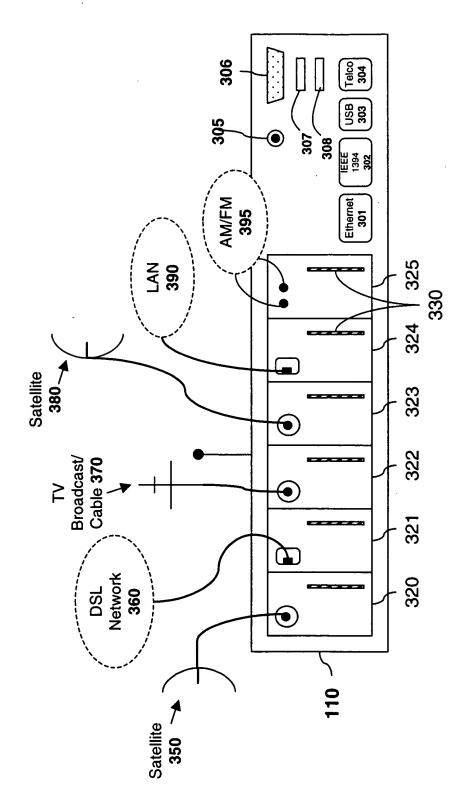
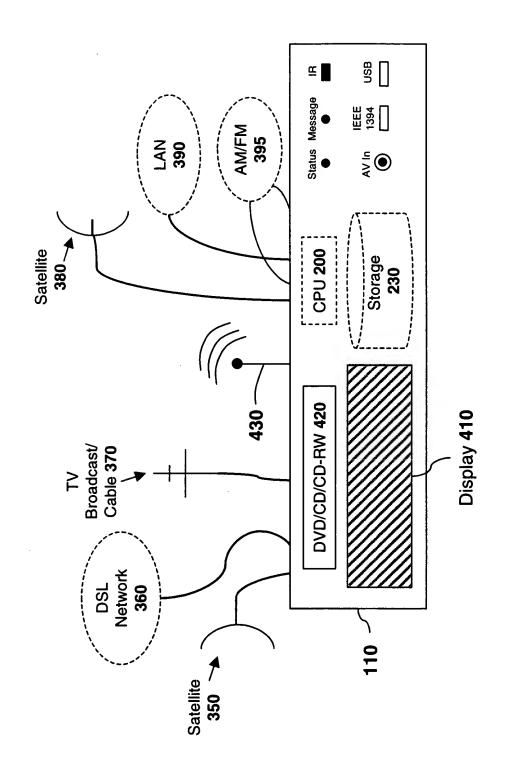


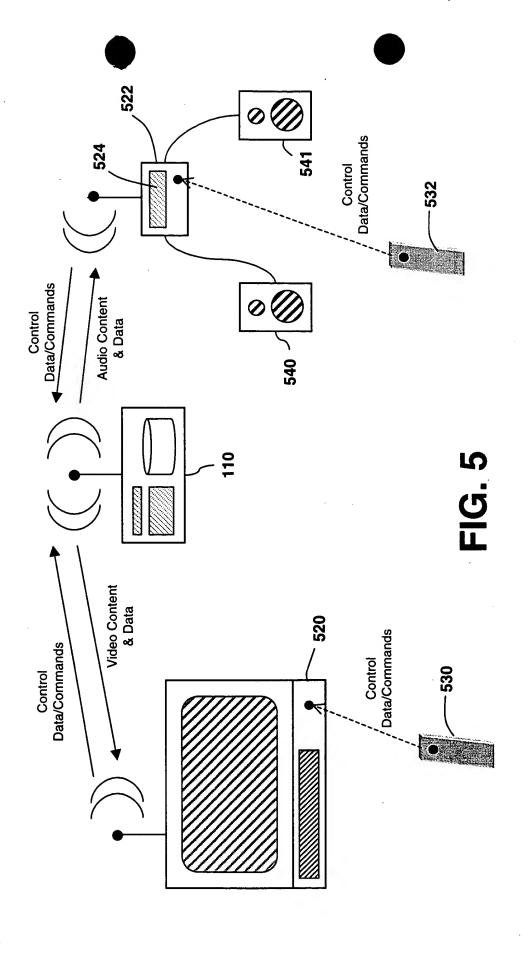
FIG. 2b



**FIG. 3** 



**FIG. 4** 



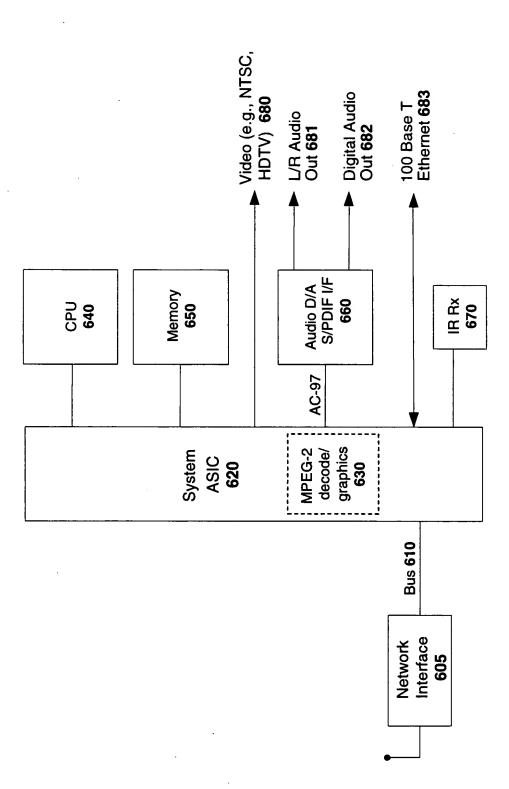


FIG. 6a

Client-specific Apps <b>697</b>	UI Widgets 694 HTML/XML 695	Operating System <b>691</b>	Hardware <b>690</b>
Media Server Control Apps 696	Client Media Toolkit 693	Client customization 692 Operatin	Haro

FIG. 6b

Server 602 Tuner Real Time OS 270 Tuner Driver 271 Media Server 110 Media Toolkit 260 Hardware 280 RTP/RTSP 251 Apache **250** UI Widgets | HTML/XML 695 Media Node/Client 151 Other Apps Operating System 691 Hardware 690 694 TV Tuning App 601 Media Toolkit 693

**FIG.** 6c

Jukebox Server **604** Hardware 280 Mass Storage Device 230 Real Time OS 270 File System 606 Media Server 110 Media Toolkit 260 RTP/RTSP 251 Apache **250** UI Widgets HTML/XML 694 695 Media Node/Client 150 Other Apps Operating System 691 Hardware 690 CD Jukebox App Media Toolkit 693

**FIG.** 6d

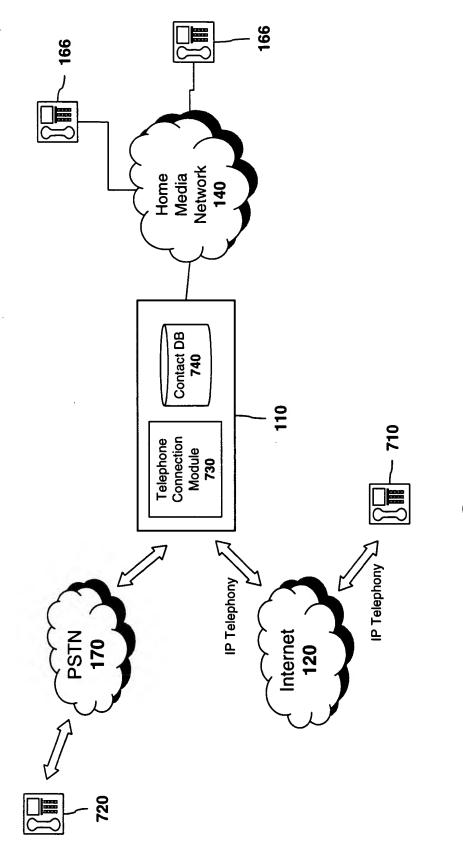


FIG. 7a

## Media Toolkit 260

Audio Codec G.711 G.723 G.729	
Audio and Video Control RTCP	
SIP Session Initiation Protocol	
H.323	
MEGACO Media Gateway Control H.248	

Video Codec H.261 H.263 宀

T.120

Transport Layer (TCP/IP or UDP)

## FIG. 7b

(from/to, Call-ID, etc.) INVITE

(confirms receipt of SUCCESS message) ACK 752

(user accepted call)

751

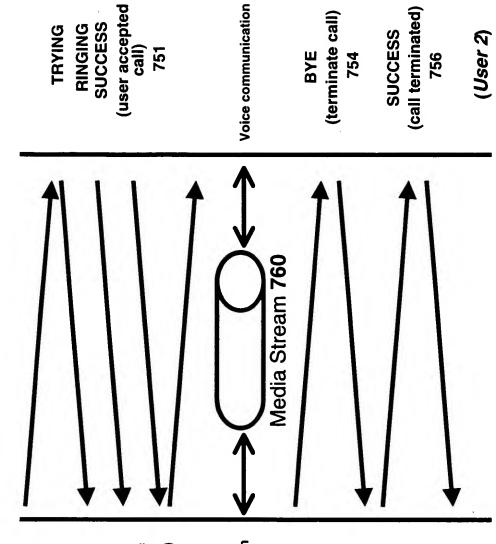
SUCCESS

TRYING RINGING

> allocates a media stream for the audio channel (terminate call) Media Server BYE 753

(call terminated) SUCCESS

(User 1)



(call terminated) 756

SUCCESS

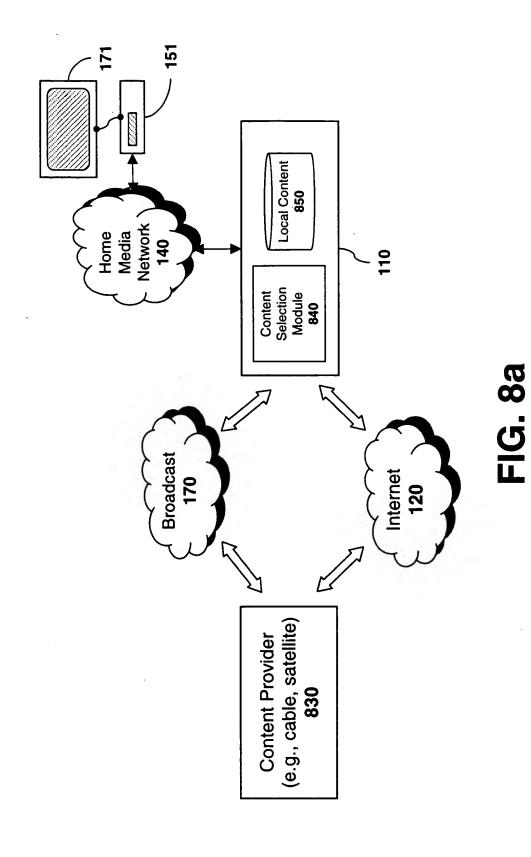
(terminate call)

754

BYE

(User 2)

FIG. 7c



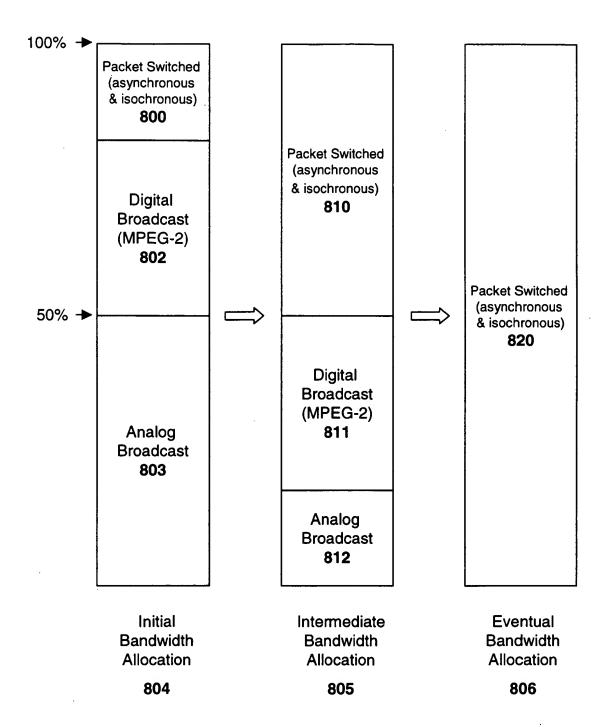


FIG. 8b

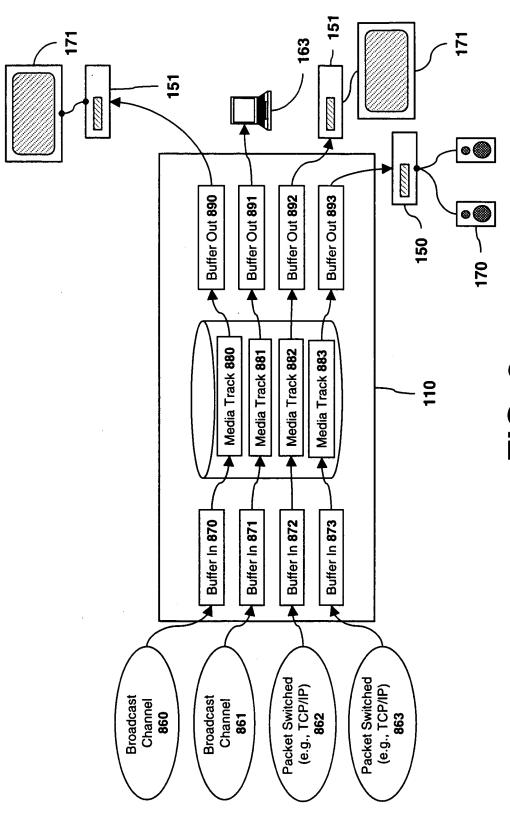


FIG. 8c

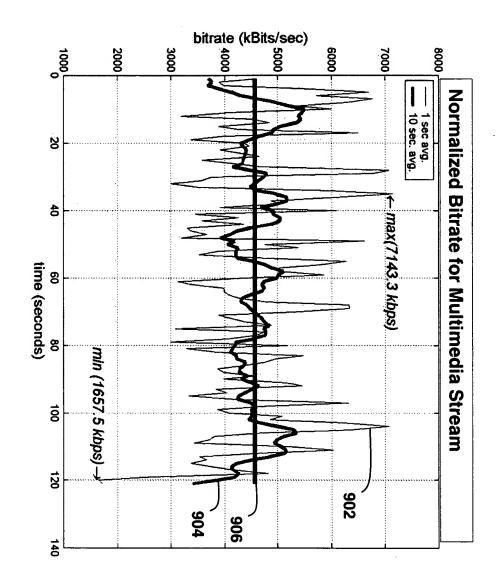
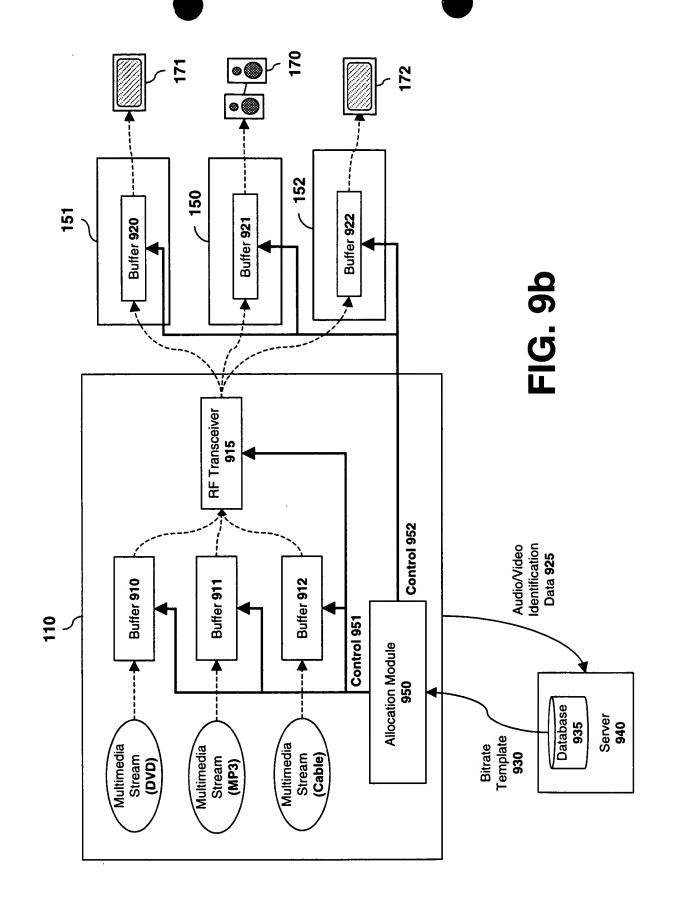
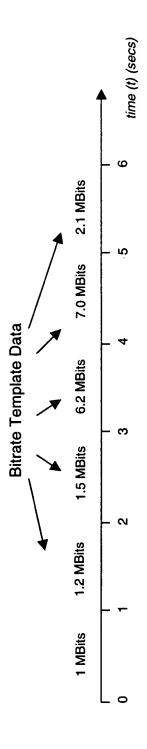


FIG. 9a





**FIG. 9**0

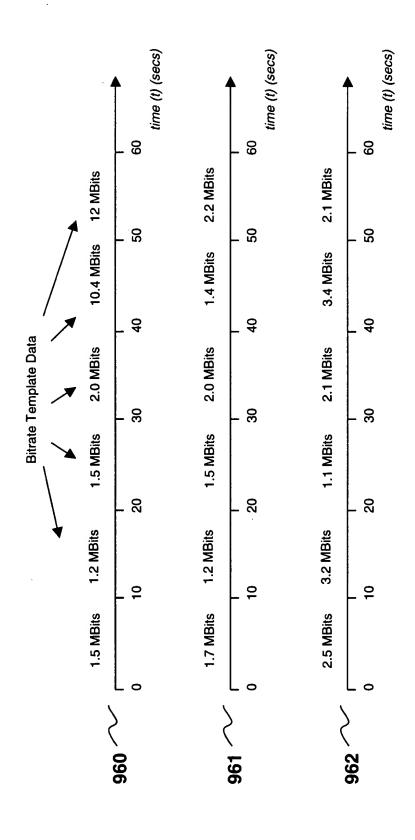


FIG. 9d

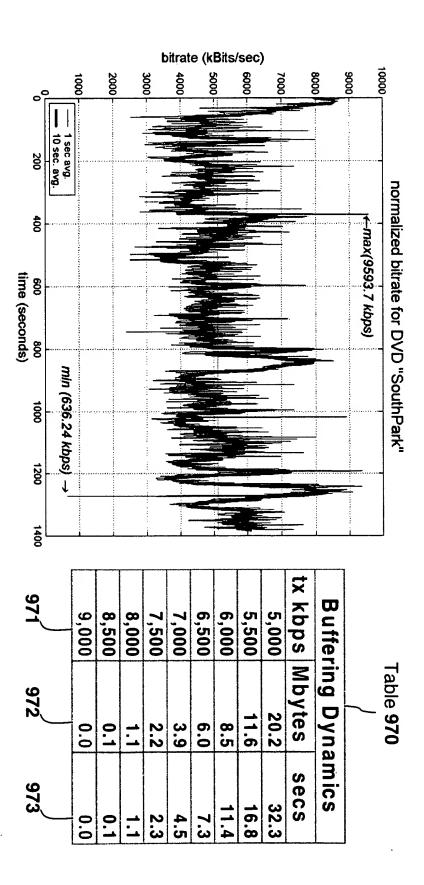


FIG. 9e

SCAN 111

bitrate (kBits/sec) 2000 8 8 mln (359.26 kbps) → 200 **\$** normalized bitrate for DVD "Species1," time (seconds) ←max(8281.5 kbps) 8 1200 **1**400 **5**60 Buffering Dynamics tx kbps Mbytes secs Table **975** secs

0.0

FIG. 9f

SCAN 11

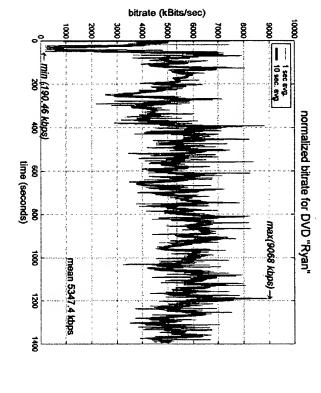


FIG. 9g

7,000	6,500	6,000	5,500	5,000	tx kbps	Buffer	
0.0	0.1	0.2	0.4	61.5	<b>Mbytes</b>	Buffering Dynamics	
0.0	0.1	0.3	0.6	98.5	secs	amics	

SCAN 711

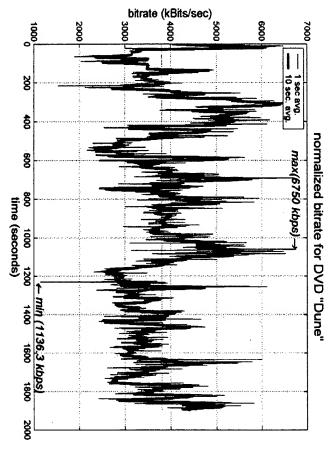
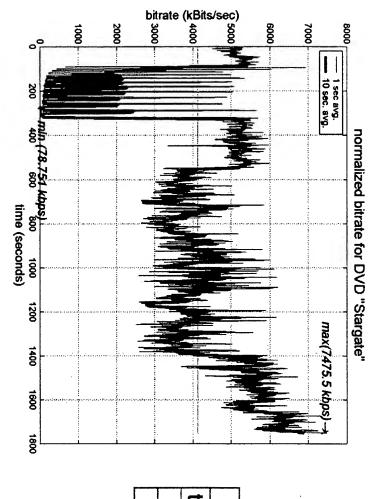


FIG. 9h

Buffering Dynamicstx kbpsMbytessecs5,5000.30.56,000006,5000.00.07,0000.00.07,5000.00.0	0.0	0.0	8,000
Buffering Dynamics   kbps Mbytes sec   5,500 0.3   6,000 0 0   6,500 0.0 0   7,000 0.0 0	0.0	0.0	7,500
Buffering Dynamics   kbps Mbytes sec   5,500 0.3 0.3   6,000 0 0	0.0	0.0	7,000
Buffering Dynan kbps Mbytes 5,500 0.3 6,000 0	0.0	0.0	6,500
Buffering Dynan kbps Mbytes 5,500 0.3	0	0	6,000
Buffering Dynan kbps Mbytes	0.5	0.3	5,500
<b>Buffering Dynamics</b>	secs	Mbytes	kbps
	mics	ing Dyna	Buffer

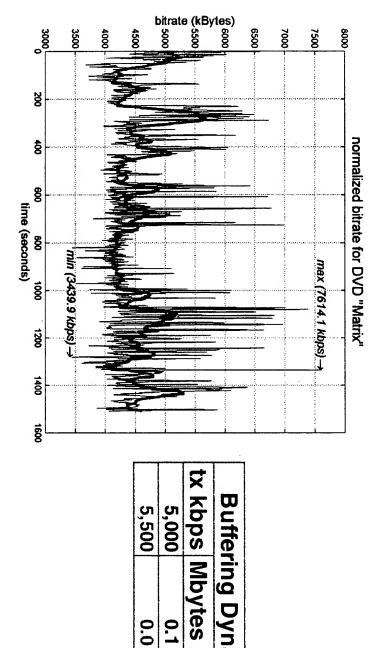
SCANITA



**-**IG. 9i

0   005 S	5,000 2.5	kbps Mbytes	<b>Buffering Dy</b>	
0 0	5 3.9	secs	Dynamics	

SCANTII



**Buffering Dynamics** 

secs

5,500 5,000

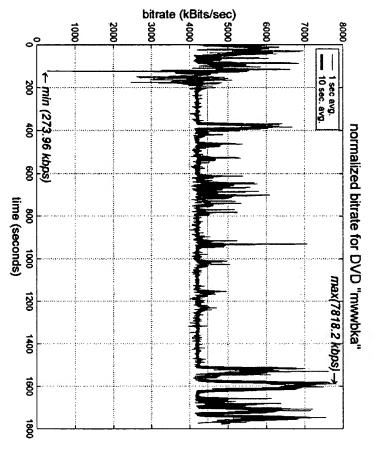
0.0 0.1

0.0 0.1



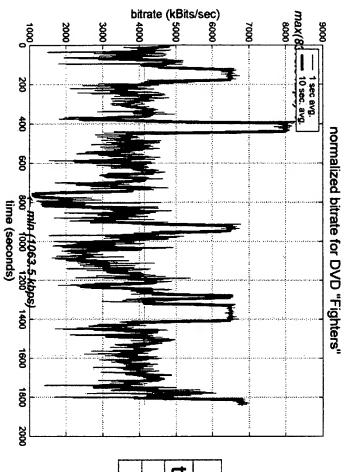
S. J. W. Machine

FIG. 9k



0.0	0.0	6,000
1.3	0.9	5,500
5.2	3.3	5,000
secs	<b>Mbytes</b>	tx kbps
amics	<b>Buffering Dynamics</b>	Buffe

FIG. 91



0.0	0.0	5,500
0.0	0.1	5,000
secs	Mbytes	tx kbps
Dynamics	i	Buffering

bitrate (kBits/sec) 8000 4000 C 4500 5000 7500 8500<sub>T</sub> 7000 -- 1 sec avg. -- 10 sec. avg. 8 normalized bitrate for DVD "Yellow Sub" ← min (4270.4 kbps) 600 time (seconds) ← max(8101.6 kbps) ş <del>1</del>000 1200 1200

tx kbps | Mbytes

secs

150.8 80.6

241.2

5,000 5,500 6,000 6,500

0.0

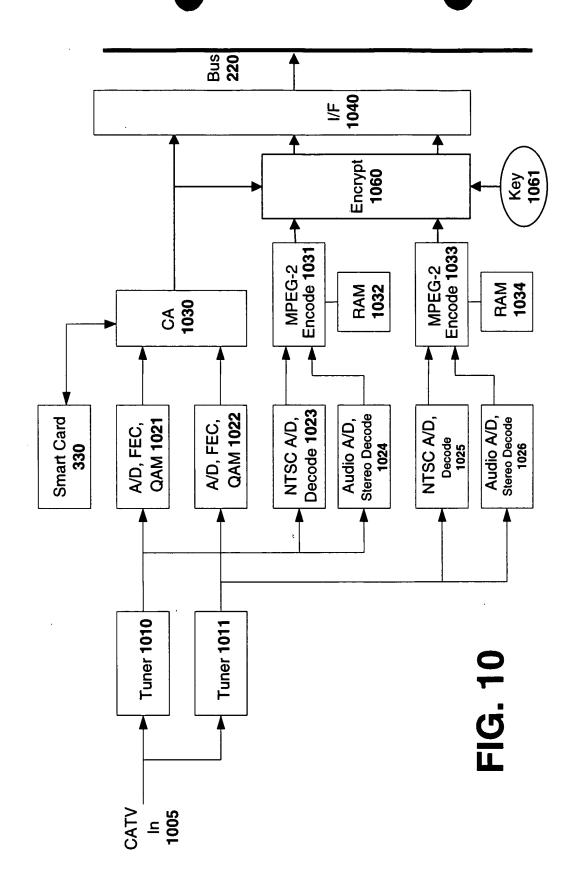
22.9

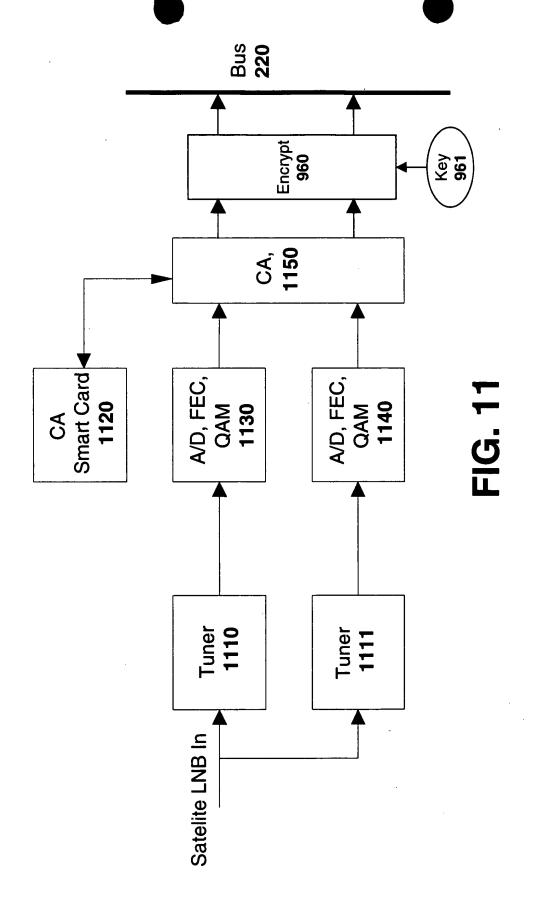
7,000

**Buffering Dynamics** 

FIG. 9m

SCAN TIT





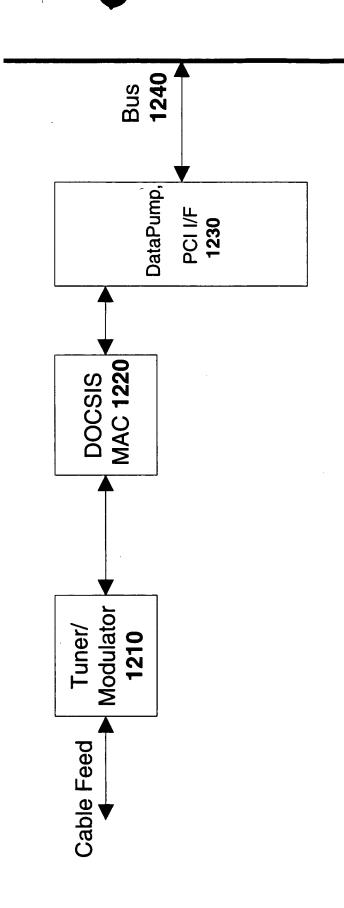


FIG. 12